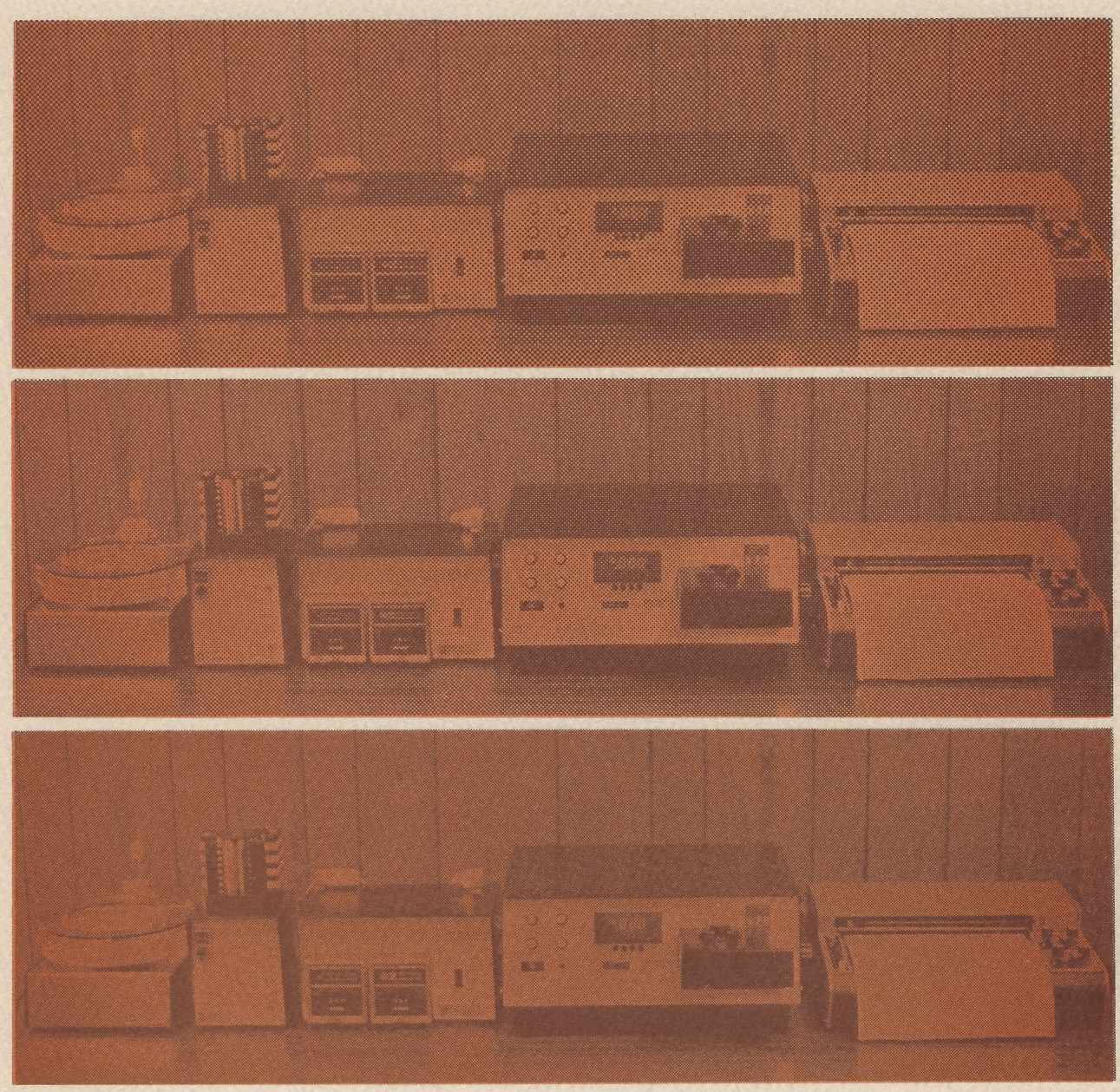
A new era in continuous flow analysis . . .

The LACHAT FIA® 1000

AUTOMATIC FLOW INJECTION ANALYZER



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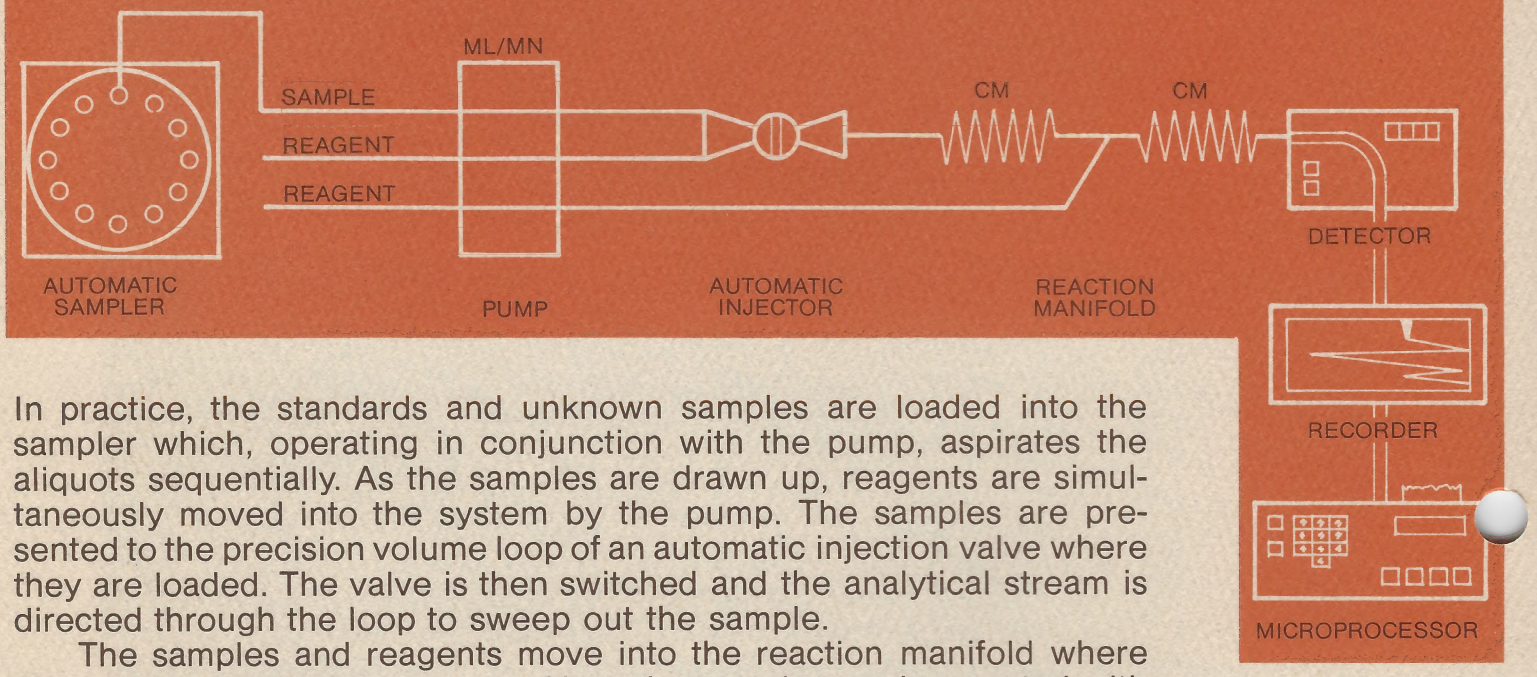
The Lachat FIA® 1000 Automatic Flow Injection Analyzer is an ultrafast, continuous flow system which utilizes an unsegmented analytical stream. The system operates nominally between 120 and 200 samples per hour. Accuracy and precision are extremely high while reagent consumption and pumping pressures are consistently low.

The FIA® 1000 is a modular system consisting of a high speed automatic sampler, variable speed peristaltic proportioning pump, reaction manifold, detector, recorder and system programmer/printer.

FIGURE 1

LACHAT FIA® 1000 SCHEMATIC

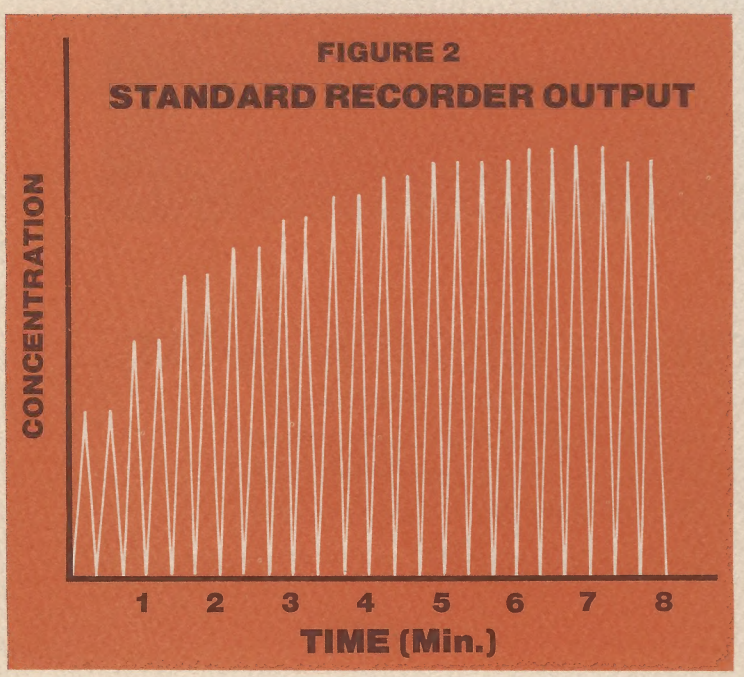


In practice, the standards and unknown samples are loaded into the sampler which, operating in conjunction with the pump, aspirates the aliquots sequentially. As the samples are drawn up, reagents are simultaneously moved into the system by the pump. The samples are presented to the precision volume loop of an automatic injection valve where they are loaded. The valve is then switched and the analytical stream is directed through the loop to sweep out the sample.

The samples and reagents move into the reaction manifold where the analytical processing occurs. Here the sample may be reacted with a variable number of reagents, incubated, dialyzed and/or extracted. Mixing is effected by longitudinal and radial sample dispersion under laminar flow conditions. The reaction product moves to the flow cell of an appropriate detector where the results are determined.

FIGURE 2

STANDARD RECORDER OUTPUT



Since sampling is performed by highly reproducible volumetric injections instead of aspiration, the reaction does not have to reach completion or the so-called upper steady state. Rather, it need only be brought to the same point of completion for each sample. Thus, the output appears as a series of sharp peaks on a strip chart recorder. Optionally, the analog signal is converted to digital form and printed out together with a sample number and run-time diagnostics.

For multi-channel configurations of the FIA® 1000, a microprocessor is offered to both control the system operating parameters and serve as the output device. The analog data received there is converted to digital form after which it may be manipulated, analyzed,

printed out and stored. In addition, equipped with the appropriate modules of the software package, the microprocessor will serve as a laboratory data management system for all other analytical instruments in your lab including GC, HPLC, AAS, CFA, flame photometers, electronic balances, etc.

The operating characteristics of the FIA® 1000 are highly desirable and previously unattainable with any other type of analyzer, discrete or continuous. The system can analyze a wide variety of sample matrices in both industrial and clinical laboratories. The short equilibration time and high sample throughput combine to make the instrument equally suitable for both stat and batch analyses.

TABLE I
CHARACTERISTICS

- Nominal Analysis Rate of 120 Samples/Hour
- High Flow Velocities
- Unsegmented Analytical Stream
- Controllable Sample Dispersion
- Narrow Bore Tubing
- No Equilibration Time — Fast Start Up
- Injection of Sample
- Short Sampling Times
- Small Sample Volumes
- Negligible Lag Phase
- No Steady State
- High Accuracy & Precision
- Low Reagent Consumption
- Low Pumping Pressures
- Fast Wash Out

TABLE II
SAMPLE MATRICES

- Waters
- Soils
- Plants
- Pharmaceuticals
- Foods
- Beverages
- Blood

TABLE III
APPLICATIONS

- Spectrophotometry
- Potentiometry
- Fluorimetry
- Flame Photometry
- Polarimetry
- Refractometry
- Titrimetry
- Turbidimetry
- Nephelometry
- Viscometry
- Multi-element Analysis
- Kinetic Studies

Flow injection analysis is the most versatile analytical technique in existence. The FIA® 1000 approaches the concept of a universal laboratory analyzer due to its high flexibility. Analyses that previously required two different types of analyzers, for example fluorimetric reactions and titrations, can now be performed on the same basic system.

And the pricing is structured to facilitate rapid payback for even moderately busy laboratories.

NOTE: Please see back page for system specifications, ordering information and available options.

TABLE IV Partial List of Current Methods and Corresponding Analytical Rates

Parameter	Samples/Hr	Parameter	Samples/Hr	Parameter	Samples/Hr
Aluminum	100	Iron	60	pH	180
Ammonia	200	Nitrates	120	Sodium	125
Bromide	50	Nitrites	240	Sulfates	180
Chloride	300	Nitrogen	200	Trypsin	100
Caffeine	60	Phosphates	200	Viscosity	100
Calcium	300	Phosphorus	420		
Iodide	50	Potassium	125		

SYSTEM SPECIFICATIONS

Batch Size:	Up to 120 Samples	Reproducibility:	Better than 1%
Sampling Rate:	120 Per Hour (nominal)	Carry-over and Cross-contamination:	Less than 1%
Sample Volume:	30 ul (nominal)	Equilibration Time:	Negligible
Sample Dispersion:	Controllable	Lag Phase:	Negligible
Accuracy & Precision:	Better than 1%		

Detailed specifications on each module are given on individual technical data sheets.

ORDERING INFORMATION

The FIA® 1000 Automatic Flow Injection Analyzer, Single Channel System is delivered as follows:

- **Automatic Sampler, 40 Positions**
- **Peristaltic Proportioning Pump, Variable Speed**
- **Automatic Injector, Pneumatically-Actuated Four-Way Teflon Valve**
- **Reaction Manifold, Accommodates Analysis Specified**
- **Colorimeter, Single Channel**
- **Programmer/Printer**
- **Recorder, Single Pen**
- **Standard Accessory and Spares Kit**
- **Installation and On-Site Training**

OPTIONS

- 120 Batch Attachment for Automatic Sampler
- Constant Pressure Pump for Organic Solvents and Acids
- Development Kit for Experimental Applications
- Colorimeter, Multichannel
- Spectrophotometer, 290 to 850 nm
- UV Extension Module for Spectrophotometer, 200 to 350 nm
- Two Pen Recorder
- Microprocessor-Based Laboratory Data Management System
- Block Digestor for Pre-Analysis Acid Digests, 40 or 120 Positions
- Acid Scrubber for Block Digestor

FOR FURTHER INFORMATION, PLEASE COMPLETE THE ENCLOSED CARD.

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